

XIX. *On the Variegation of Plants. In a Letter to Richard Anthony Salisbury, Esq. F.R.S. and L.S. by Thomas Andrew Knight, Esq. F.R.S. and L.S.*

Read March 15, 1808.

MY DEAR SIR,

THOUGH variegated plants have long occupied the care and attention of the gardener, it does not appear that the peculiarities which distinguish them have much attracted the attention of the naturalist; and I am not acquainted with any experiments which have been made either to discover the cause of variegation, or the effects produced by it. I am therefore induced to trouble you with an account of a few experiments which I have made on one species of variegated plant, from which I obtained an unexpected and somewhat interesting result.

There is a kind of variegated vine, well known to gardeners (the Aleppo), which affords variegated leaves and fruit; and as the grape, though small, possesses a very high flavour, and much richness, I wished to obtain some offspring either from its seeds or farina, with the hope of procuring berries of larger size, and at the same time of ascertaining whether its variegation would be transferred to the offspring.

With this object in view I extracted the immature stamina of the blossoms of the White Chasselas, and White Frontignac vines; and at the proper subsequent period I introduced the farina of the Aleppo vine: from this experiment I obtained,

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in the succeeding spring, many seedling plants. These plants, which were raised in a hot-bed, presented no singularity of character on their first appearance; but early in the succeeding summer I had the pleasure to observe purple stripes in the seed-leaves of several of them; and in the autumn the leaves of many were variegated. I did not however obtain a single plant which promised to produce, or has subsequently afforded, either coloured fruit, or coloured leaves, free from variegation.

When, on the contrary, I have introduced the farina of a black, or purple grape into the blossom of a white one, none of the plants I obtained have ever been variegated; and the colour of the leaves and fruit, which these in the first year afforded, indicated with certainty the colour of all the produce of such varieties, in whatever soil cuttings taken from them were subsequently planted. But in the variegated vines the result has been wholly different; and though the leaves and fruit first produced by some of them contained more tingeing matter than any of the coloured kinds, they subsequently produced, even on the same tree, some bunches almost entirely black, others perfectly white, others lead-coloured with stripes of white, and others white with minute black stripes; and grapes of all the preceding colours are very frequently seen on the same cluster. The leaves are also subject to the same variations, and the colours in them are in some instances confined to the *upper*, in others to the *under* surface, and sometimes extend quite through; and both the leaves and fruit of some of the branches have become permanently colourless.

It appears therefore obvious, that the tingeing matter of variegated grapes, though probably not essentially different from that of others, is differently combined, and united to the plant; and as the variegated grape afforded offspring similar to itself, and

none similar to other vines, which permanently afford coloured fruit, it may be confidently inferred, that the nature of the union between the tingeing matter and the plants is very essentially different.

All the variegated plants that I obtained from the farina of the Aleppo vine, are not only perfectly free from disease and debility of every kind, but many of them possess a more than ordinary degree of hardiness and vigour; and two of them appear much more capable of affording mature fruit, in the climate of England, than any now cultivated. It is therefore sufficiently evident that the kind of variegation which I have described is neither the offspring of, nor connected with, disease or debility of any kind. But the same inference must not be drawn respecting other variegated plants; for variegation itself appears to consist of several distinct kinds. The leaves of a variety of the common cabbage are often seen, in the cottage garden, curiously tinged with different shades of red and purple, like the leaves of the vines which I have described: but in the cabbage these colours combine and melt into each other, whereas in the vines the distinct colours are separated by well defined lines. The colours of the cabbage are transferred to its offspring, which is perfectly hardy and vigorous.

The spotted lettuce must also be classed with variegated plants, and the offspring of this is as hardy as those of other varieties: but the most common kind of variegation, in which the leaves are variously striped with white and yellow, though not the offspring, as some writers have imagined, of disease, is, however, closely connected with some degree of debility; possibly owing to the imperfect action of light on all such parts of the leaves as are either white or yellow. For I have observed that variegated hollies are less patient of shade than such as are wholly

wholly green; and I have never seen any plants, the leaves of which are wholly white or yellow, that continued to live beyond a single season. A variegated plant of the raspberry, which sprang from seed in my garden, became wholly white in the third year; but it perished in the succeeding winter, and I should be disposed to conclude that plants whose leaves are entirely white or yellow, cannot long survive; but that Du Hamel\* has described a variety of the peach tree, of which he says, "son bois, ses feuilles, ses fleurs, et son fruit, tant extérieurement qu'intérieurement, sont tout à fait blancs." This variety is at present, I believe, wholly unknown to our gardeners; and I suspect that it was always a debilitated plant, and that it in consequence exists no more. I am, &c.

THOMAS ANDREW KNIGHT.

\* In his Treatise on Trees.—Article Peach Tree.